Exhibit 8 to Complaint
Intellectual Ventures I LLC and Intellectual Ventures II LLC

Example American Count 1 Systems and Services
U.S. Patent No. 8,332,844 ("the '844 Patent")

The Accused Systems and Services include without limitation American systems and services that utilize Docker; all past, current, and future systems and services that operate in the same or substantially similar manner as the specifically identified systems and services; and all past, current, and future American systems and services that have the same or substantially similar features as the specifically identified systems and services ("Example American Count 1 Systems and Services" or "American Systems and Services").[1]

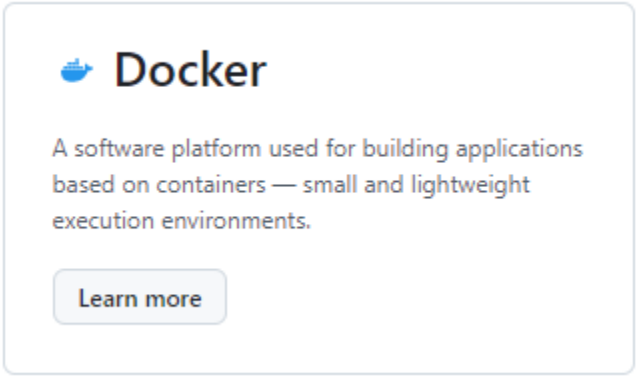
On information and belief, the American Systems and Services use Docker in its private cloud(s). For example, American posts, or has posted, job opportunities that require familiarity with Docker containerization concepts.

- Example of job posting for an Engineer/Sr Engineer in IT Situational Awareness at American Airlines which mentions Docker as a necessary skill for the position. https://jobs.aa.com/job/EngineerSr-Engineer%2C-IT-Situational-Awareness/75837-en_US (Last accessed 10/31/2024).
- Example of job posting for an Associate Developer in IT Applications at American Airlines which mentions Docker as a necessary skill for the position. https://jobs.aa.com/job/Associate-Developer%2C-IT-Applications/75816-en_US (Last accessed 10/31/2024).
- Example of Sr. Cloud Infra DevSecOps Engineer/Architectposition at American Airlines which mentions use of Docker. https://www.linkedin.com/in/rupa-m-b90836309/ (Last accessed on 9/19/24).
- Example of Kubernetes Engineer position at American Airlines which mentions use of Docker. https://www.linkedin.com/in/sridhar-pulluri-199b56250/ (Last accessed on 9/19/24)
- Example of Software Engineer position at American Airlines which mentions use of Docker. https://www.linkedin.com/in/pthotakura9/ (Last accessed on 9/19/24)
- Example of Senior Developer, IT Applications position at American Airlines which mentions use of Docker. https://www.linkedin.com/in/cj-cohorst-61a614173/ (Last accessed on 9/19/24)
- Example of Developer position at American Airlines which mentions use of Docker. https://in.linkedin.com/in/prudhvi-kumar-rayapati.

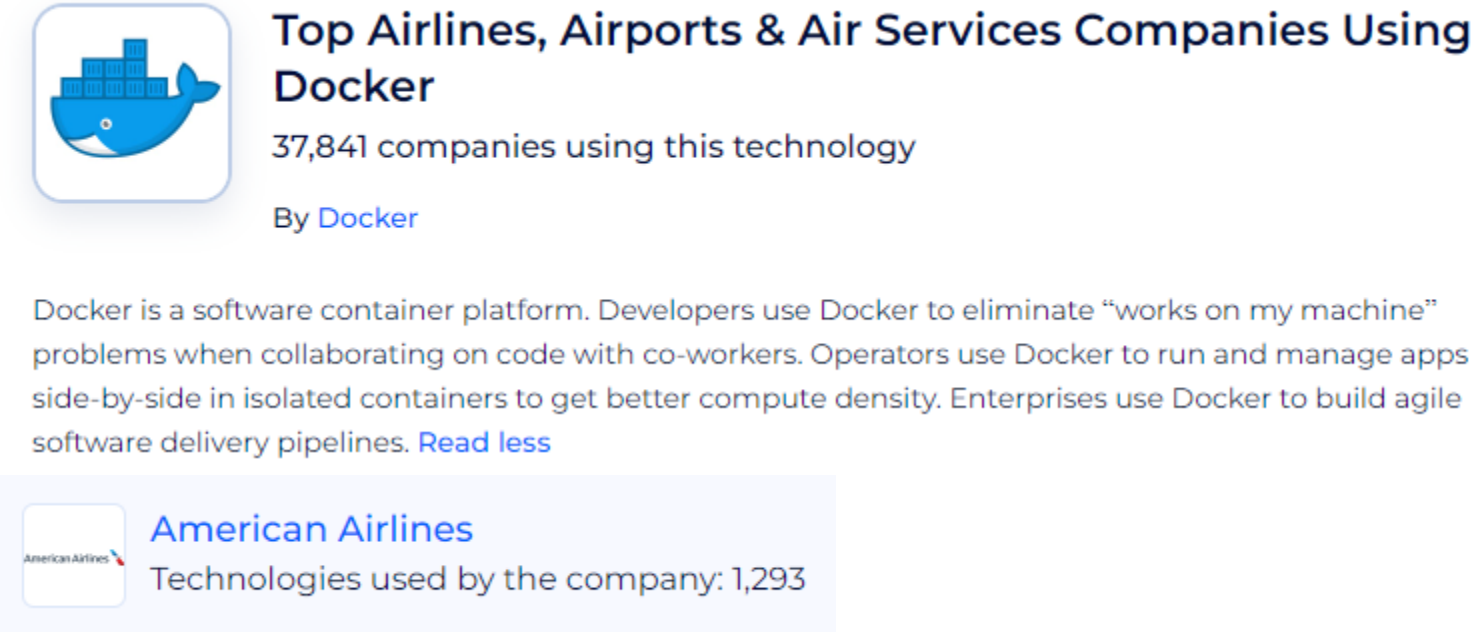
As another example, American has announced cloud migration of legacy technology and efforts to modernize its mainframes and servers. Source: https://dxc.com/sg/en/insights/customer-stories/american-airlines-cloud-data-automation.

[1] For the avoidance of doubt, Plaintiffs do not accuse public clouds of American if those services are provided by a cloud provider with a license to Plaintiffs' patents that covers American's activities. IV will provide relevant license agreements for cloud providers in discovery. To the extent any of these licenses are relevant to American's activities, Plaintiffs will meet and confer with American about the impact of such license(s).

On information and belief, other information confirmed American uses Docker technology.



Source: https://github.com/orgs/americanair/packages.



Source: https://www.zoominfo.com/tech/23717/docker-tech-from-transportation-airline-industry-in-us-by-revenue.

When I came to American Airlines, I tried to contribute to several InnerSource projects in our corporate VCS. One of the things I observed is that local development leaned on local installations of the application framework extensively. In the past, I've been victim of "worked on my machine" in similar setups and wanted to get a better understanding of how pervasive containers were being used. I wanted to present options on how to use containers to help remove local dependency hell. There was plenty of opportunity to leverage this approach for local development 🤼

Using containers for a local development environment can help remove impediments in situations such as:

- My stack has several dependencies that are hard to emulate:
  - Databases, and associated volumes for (short-lived) storage
  - Caches
  - Connectivity to the above, with declarative service names
- I have a bunch of application dependencies (`requirements.txt`, `packages.json`, `Gemfile`)
- There are many moving parts to reproduce a production-like environment
- My team uses different operating systems, or versions of operating systems

Windows and macOS

- Install Docker - `stable` or `edge` is fine. For the purposes of this write-up, we're using basic features.

Source: https://tech.aa.com/2020-10-13-containers-local-dev/.

Karl Haworth, is a Principal Staff Engineer on American Airlines Developer Experience products. His team is leveraging Chainguard Images to harden their software and strengthen the security of their software supply chain. Karl recently created an alternative, secure image for the Backstage open-source framework using Changuard's wolfi-base image. In this guest post, Karl explores the decision to use wolfi-base and the benefits he has seen in reducing vulnerabilities and shrinking the overall Backstage attack surface.

American Airlines is committed to enhancing the developer experience by implementing a frictionless self-service platform to create delightful developer experiences. By doing so, the developers can deliver value *sooner* to our customers. In order to achieve the stated goal, we adopted Spotify's Backstage open-source framework for accelerating the development of our internal developer portal Runway. This marks my third endeavor at establishing a developer portal which has been successful due to a heavy focus on InnerSource practices. Backstage has proven instrumental in streamlining the development process, thanks to its community-driven foundation as a solid base to build upon.

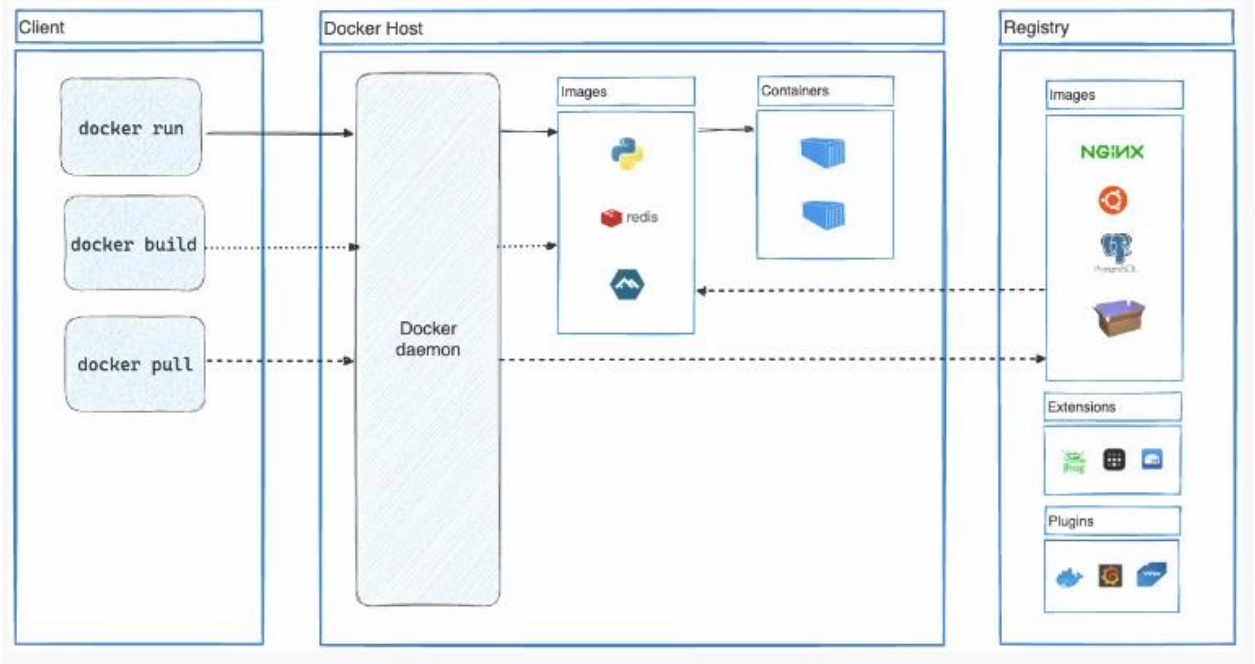
While Backstage prioritizes security, concerns arise when utilizing the base image, `node:18-bookworm-slim`, as it contains 74 vulnerabilities ranging in severity. This has prompted us to assess the security implications when using the docker build command and `Dockerfile` within the Backstage framework, as the default added an additional 330 vulnerabilities. I attempted using updated node and Debian images, but they also yielded similar results, prompting me to seek out different solutions.

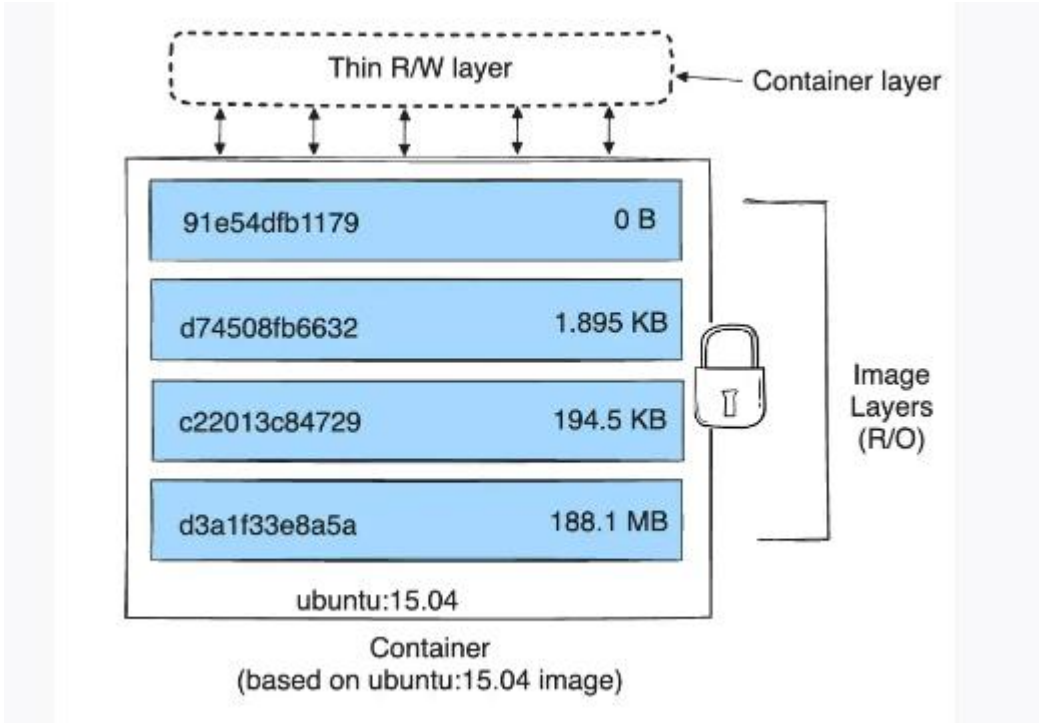
Source: https://www.chainguard.dev/unchained/reducing-vulnerabilities-in-backstage-with-chainguards-wolfi. See also https://karlhaworth.com/ .

U.S. Patent No. 8,332,844 (Claim 7)	
Claim(s)	**Example American Count 1 Systems and Services**
[7.pre]. A method for providing data to a plurality of compute nodes, comprising:	To the extent this preamble is limiting, on information and belief, the American Count 1 Systems and Services practice a method for providing data to a plurality of compute nodes. For example, on information and belief, American's use of Docker provides "a method for providing data to a plurality of compute nodes." Docker is an open platform for developing, shipping, and running applications. Docker enables you to separate your applications from your infrastructure so you can deliver software quickly. With Docker, you can manage your infrastructure in the same ways you manage your applications. By taking advantage of Docker's methodologies for shipping, testing, and deploying code, you can significantly reduce the delay between writing code and running it in production. Source: https://docs.docker.com/get-started/overview/.[2] The Docker platform Docker provides the ability to package and run an application in a loosely isolated environment called a container. The isolation and security lets you run many containers simultaneously on a given host. Containers are lightweight and contain everything needed to run the application, so you don't need to rely on what's installed on the host. You can share containers while you work, and be sure that everyone you share with gets the same container that works in the same way. Source: https://docs.docker.com/get-started/overview/.

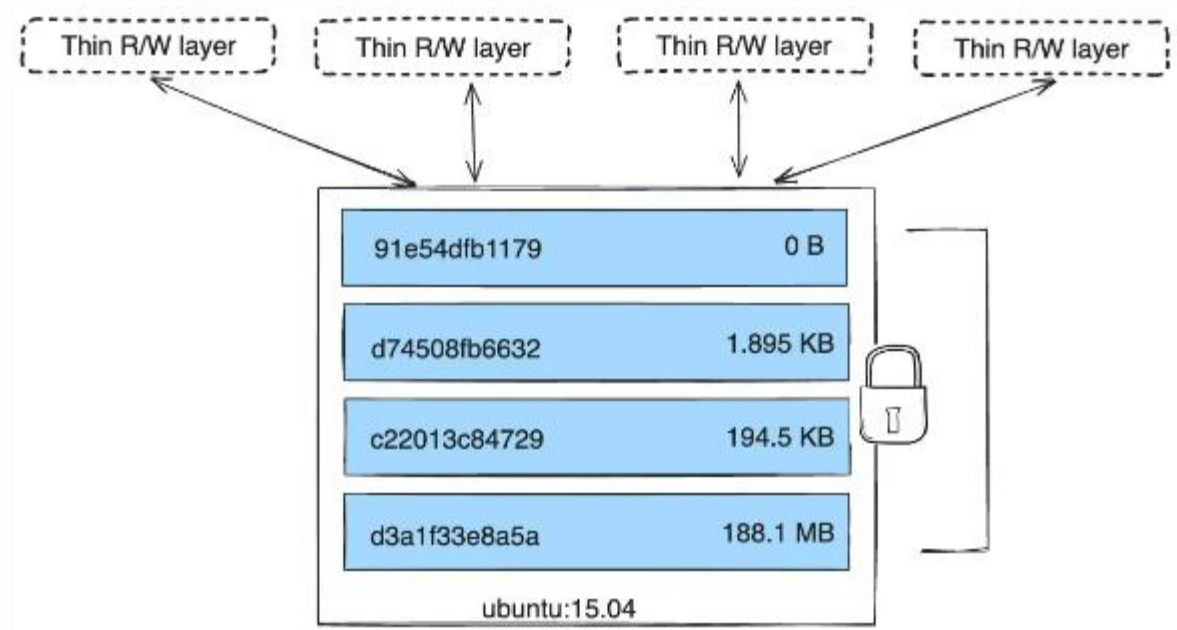
[2] All sources cited in this document were publicly accessible as of the filing date of the Complaint.

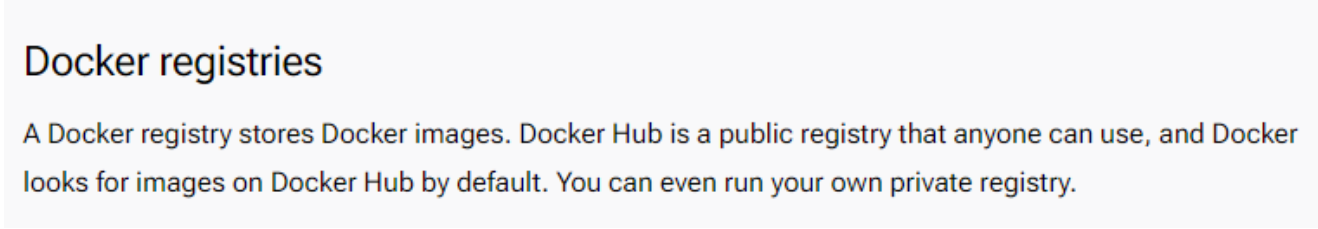
U.S. Patent No. 8,332,844 (Claim 7)	
Claim(s)	**Example American Count 1 Systems and Services**
	Docker provides tooling and a platform to manage the lifecycle of your containers: • Develop your application and its supporting components using containers. • The container becomes the unit for distributing and testing your application. • When you're ready, deploy your application into your production environment, as a container or an orchestrated service. This works the same whether your production environment is a local data center, a cloud provider, or a hybrid of the two. Source: https://docs.docker.com/get-started/overview/. On information and belief, Docker uses a client-server architecture. For example, the Docker architecture shown below shows a client, a Docker host, and a registry. Docker clients communicate with a Docker daemon, which builds, runs, and distributes Docker containers. Docker images are run within containers.

U.S. Patent No. 8,332,844 (Claim 7)	
Claim(s)	**Example American Count 1 Systems and Services**
	 Source: https://docs.docker.com/get-started/overview/.
[7.a] storing blocks of a root image of said compute nodes on a first storage unit;	On information and belief, the American Count 1 Systems and Services practice storing blocks of a root image of said compute nodes on a first storage unit. For example, on information and belief, Docker stores blocks of a root image including a collection of read-only layers in a Docker image in the Docker registry. The layers are stacked on top of each other. When you create a new container, you add a new writable layer on top of the underlying layers. This layer is often called the "container layer". All changes made to the running container, such as writing new files, modifying existing files, and deleting files, are written to this thin writable container layer. The diagram below shows a container based on an `ubuntu:15.04` image.

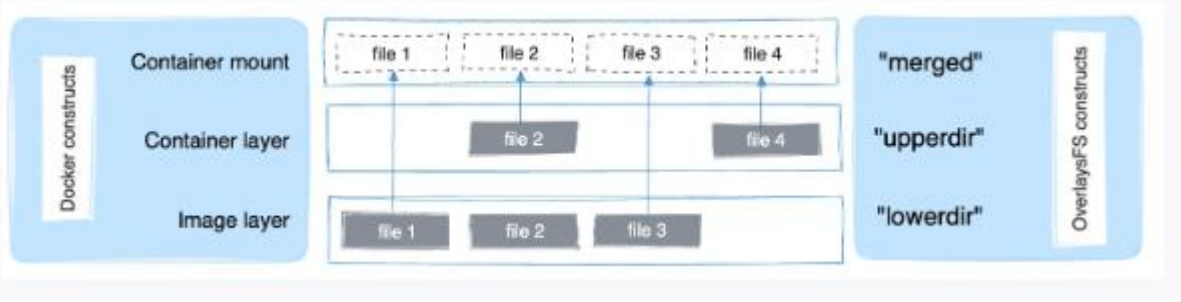
U.S. Patent No. 8,332,844 (Claim 7)	
Claim(s)	**Example American Count 1 Systems and Services**
	Source: https://docs.docker.com/storage/storagedriver/.  Source: https://docs.docker.com/storage/storagedriver/. **Distribution Registry** **What it is** The Registry is a stateless, highly scalable server side application that stores and lets you distribute container images and other content. The Registry is open-source, under the permissive Apache license.

U.S. Patent No. 8,332,844 (Claim 7)	
Claim(s)	**Example American Count 1 Systems and Services**
	Source: https://docs.docker.com/registry/. **Why use it** You should use the Registry if you want to: • tightly control where your images are being stored • fully own your images distribution pipeline • integrate image storage and distribution tightly into your in-house development workflow Source: https://docs.docker.com/registry/. On information and belief, the image below shows blocks of a root image (associated with ubuntu version 15.04) that is associated with a compute node.

U.S. Patent No. 8,332,844 (Claim 7)	
Claim(s)	**Example American Count 1 Systems and Services**
	 Source: https://docs.docker.com/storage/storagedriver/. On information and belief, an image stores blocks of a root image, such as an ubuntu image or other operating systems software and other applications and software. An image is a read-only template with instructions for creating a Docker container. Often, an image is based on another image, with some additional customization. For example, you may build an image which is based on the `ubuntu` image, but installs the Apache web server and your application, as well as the configuration details needed to make your application run. Source: https://docs.docker.com/get-started/overview/.

U.S. Patent No. 8,332,844 (Claim 7)	
Claim(s)	**Example American Count 1 Systems and Services**
	 Source: https://docs.docker.com/get-started/overview/. On information and belief, Docker includes images that are built up from a series of layers, where each layer represents an instruction in the image's Dockerfile. Blocks of a root image are stored in a memory associated with a computer such as a server (node).

U.S. Patent No. 8,332,844 (Claim 7)	
Claim(s)	**Example American Count 1 Systems and Services**
	# Images and layers A Docker image is built up from a series of layers. Each layer represents an instruction in the image's Dockerfile. Each layer except the very last one is read-only. Consider the following Dockerfile: ``` # syntax=docker/dockerfile:1 FROM ubuntu:22.04 LABEL org.opencontainers.image.authors="org@example.com" COPY . /app RUN make /app RUN rm -r $HOME/.cache CMD python /app/app.py ``` This Dockerfile contains four commands. Commands that modify the filesystem create a layer. The `FROM` statement starts out by creating a layer from the `ubuntu:22.04` image. The `LABEL` command only modifies the image's metadata, and doesn't produce a new layer. The `COPY` command adds some files from your Docker client's current directory. The first `RUN` command builds your application using the `make` command, and writes the result to a new layer. The second `RUN` command removes a cache directory, and writes the result to a new layer. Finally, the `CMD` instruction specifies what command to run within the container, which only modifies the image's metadata, which doesn't produce an image layer.

U.S. Patent No. 8,332,844 (Claim 7)	
Claim(s)	**Example American Count 1 Systems and Services**
	Source: https://docs.docker.com/engine/storage/drivers/. The major difference between a container and an image is the top writable layer. All writes to the container that add new or modify existing data are stored in this writable layer. When the container is deleted, the writable layer is also deleted. The underlying image remains unchanged. Because each container has its own writable container layer, and all changes are stored in this container layer, multiple containers can share access to the same underlying image and yet have their own data state. The diagram below shows multiple containers sharing the same Ubuntu 15.04 image. Source: https://docs.docker.com/engine/storage/drivers/. On information and belief, a Docker image and a Docker container can be layered in a manner as shown in the image below.  Source: https://docs.docker.com/engine/storage/drivers/overlayfs-driver/.

U.S. Patent No. 8,332,844 (Claim 7)	
Claim(s)	**Example American Count 1 Systems and Services**
	See also preamble [7.pre].
[7.b] storing leaf images for respective compute nodes on respective second storage units,	On information and belief, the American Count 1 Systems and Services practice storing leaf images for respective compute nodes on respective second storage units. For example, on information and belief, Docker stores leaf images including thin R/W layer in a runnable container for respective compute nodes on respective second storage units including Docker's local storage area. The layers are stacked on top of each other. When you create a new container, you add a new writable layer on top of the underlying layers. This layer is often called the "container layer". All changes made to the running container, such as writing new files, modifying existing files, and deleting files, are written to this thin writable container layer. The diagram below shows a container based on an `ubuntu:15.04` image. Source: https://docs.docker.com/engine/storage/drivers/.

U.S. Patent No. 8,332,844 (Claim 7)	
Claim(s)	**Example American Count 1 Systems and Services**

	When you use `docker pull` to pull down an image from a repository, or when you create a container from an image that doesn't yet exist locally, each layer is pulled down separately, and stored in Docker's local storage area, which is usually `/var/lib/docker/` on Linux hosts. You can see these layers being pulled in this example:
	
	`$ docker pull ubuntu:22.04`
	`22.04: Pulling from library/ubuntu`
	`f476d66f5408: Pull complete`
	`8882c27f669e: Pull complete`
	`d9af21273955: Pull complete`
	`f5029279ec12: Pull complete`
	`Digest: sha256:6120be6a2b7ce665d0cbddc3ce6eae60fe94637c6a66985312d11`
	`Status: Downloaded newer image for ubuntu:22.04`
	`docker.io/library/ubuntu:22.04`
	
	Source: https://docs.docker.com/engine/storage/drivers/.

U.S. Patent No. 8,332,844 (Claim 7)	
Claim(s)	**Example American Count 1 Systems and Services**

Images and layers

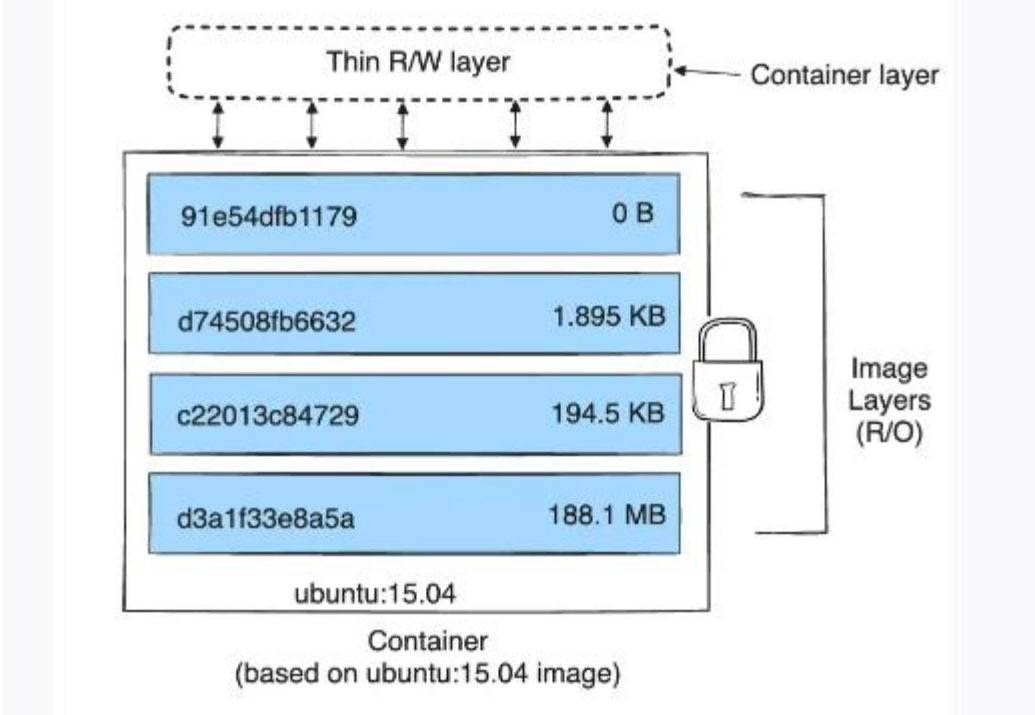
A Docker image is built up from a series of layers. Each layer represents an instruction in the image's Dockerfile. Each layer except the very last one is read-only. Consider the following Dockerfile:

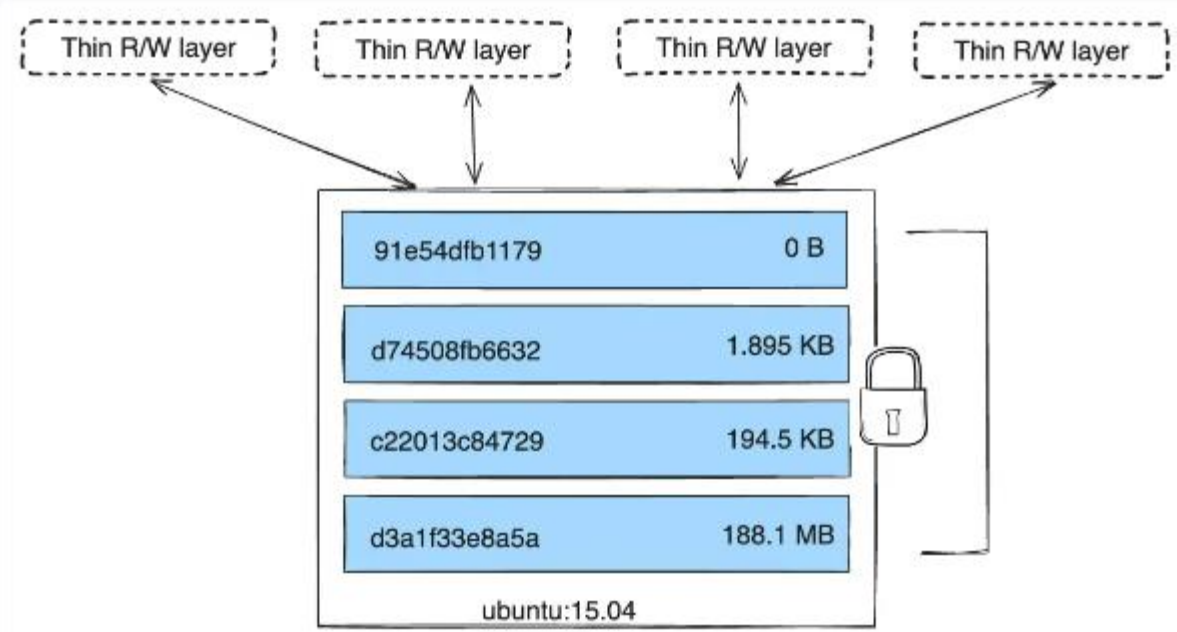
```
# syntax=docker/dockerfile:1

FROM ubuntu:22.04
LABEL org.opencontainers.image.authors="org@example.com"
COPY . /app
RUN make /app
RUN rm -r $HOME/.cache
CMD python /app/app.py
```

This Dockerfile contains four commands. Commands that modify the filesystem create a layer. The `FROM` statement starts out by creating a layer from the `ubuntu:22.04` image. The `LABEL` command only modifies the image's metadata, and doesn't produce a new layer. The `COPY` command adds some files from your Docker client's current directory. The first `RUN` command builds your application using the `make` command, and writes the result to a new layer. The second `RUN` command removes a cache directory, and writes the result to a new layer. Finally, the `CMD` instruction specifies what command to run within the container, which only modifies the image's metadata, which doesn't produce an image layer.

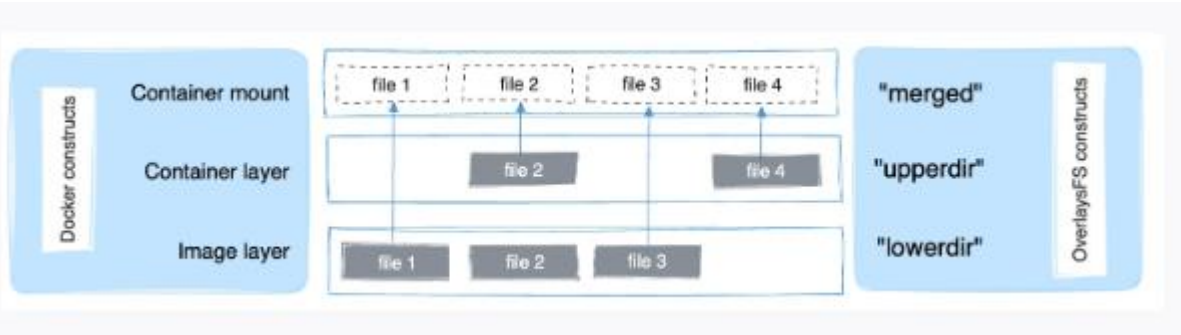
Source: https://docs.docker.com/engine/storage/drivers/.

U.S. Patent No. 8,332,844 (Claim 7)	
Claim(s)	**Example American Count 1 Systems and Services**
	The major difference between a container and an image is the top writable layer. All writes to the container that add new or modify existing data are stored in this writable layer. When the container is deleted, the writable layer is also deleted. The underlying image remains unchanged. Because each container has its own writable container layer, and all changes are stored in this container layer, multiple containers can share access to the same underlying image and yet have their own data state. The diagram below shows multiple containers sharing the same Ubuntu 15.04 image. Source: https://docs.docker.com/engine/storage/drivers/.

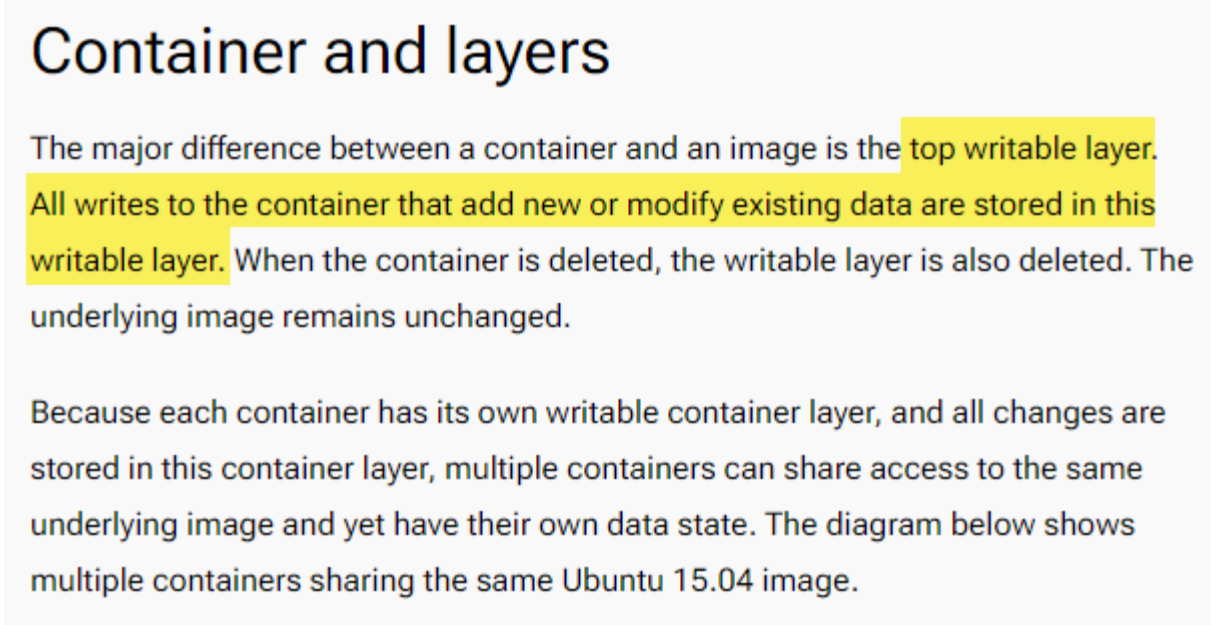
U.S. Patent No. 8,332,844 (Claim 7)	
Claim(s)	**Example American Count 1 Systems and Services**
	 Source: https://docs.docker.com/storage/storagedriver/. On information and belief, the image below shows a thin r/w layer for each of four separate containers that are each stored in memory and are associated with a a root image that is further associated with a compute node.

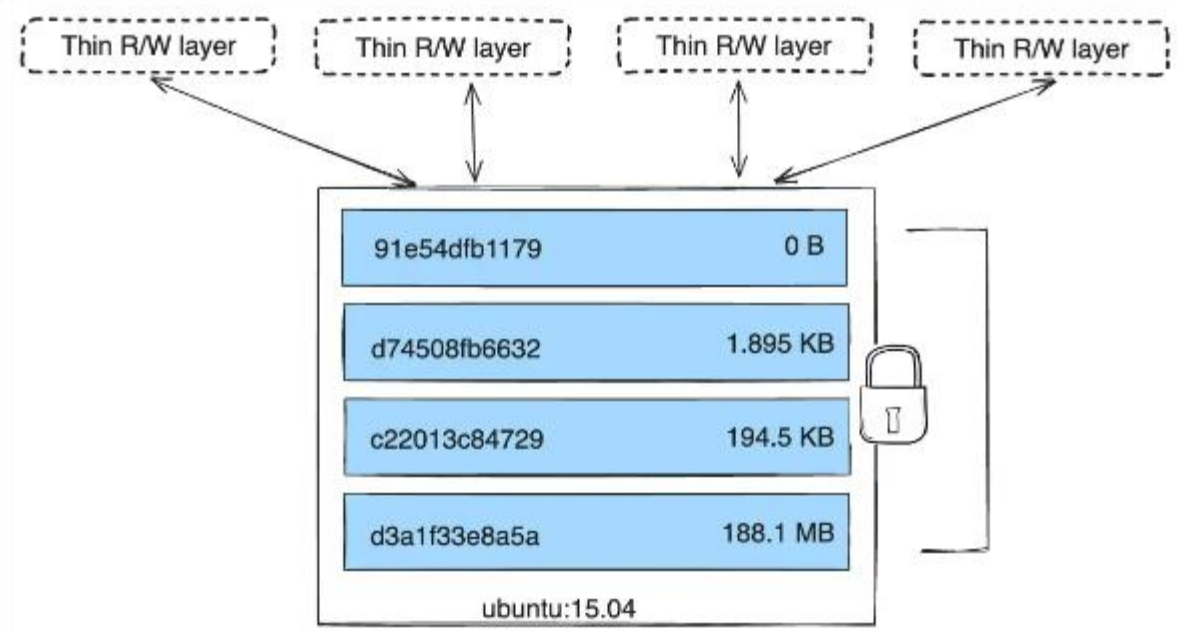
U.S. Patent No. 8,332,844 (Claim 7)	
Claim(s)	**Example American Count 1 Systems and Services**
	 Source: https://docs.docker.com/storage/storagedriver/. *See also* description below of containers. *See* https://docs.docker.com/engine/docker-overview/. On information and belief, a Docker container is a runnable instance of an image and includes configuration options when it is created or started. When an image is run and a container is generated, a writable layer is created (on top of other layer(s)) and includes all changes to the running container.

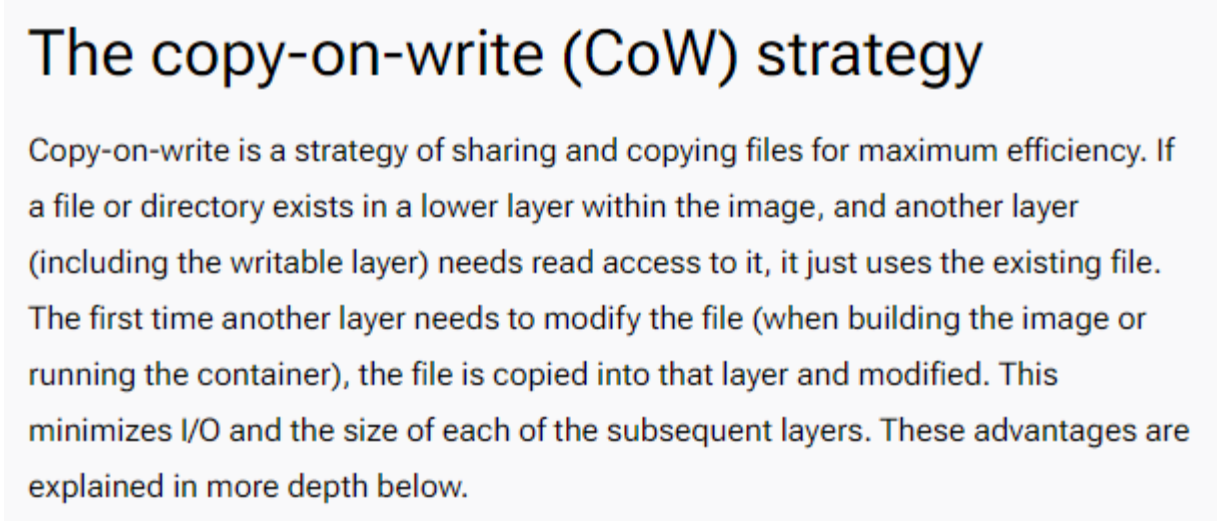
U.S. Patent No. 8,332,844 (Claim 7)	
Claim(s)	**Example American Count 1 Systems and Services**
	Containers A container is a runnable instance of an image. You can create, start, stop, move, or delete a container using the Docker API or CLI. You can connect a container to one or more networks, attach storage to it, or even create a new image based on its current state. By default, a container is relatively well isolated from other containers and its host machine. You can control how isolated a container's network, storage, or other underlying subsystems are from other containers or from the host machine. A container is defined by its image as well as any configuration options you provide to it when you create or start it. When a container is removed, any changes to its state that aren't stored in persistent storage disappear. Source: https://docs.docker.com/get-started/docker-overview/.

U.S. Patent No. 8,332,844 (Claim 7)	
Claim(s)	**Example American Count 1 Systems and Services**
	Docker uses storage drivers to store image layers, and to store data in the writable layer of a container. The container's writable layer doesn't persist after the container is deleted, but is suitable for storing ephemeral data that is generated at runtime. Storage drivers are optimized for space efficiency, but (depending on the storage driver) write speeds are lower than native file system performance, especially for storage drivers that use a copy-on-write filesystem. Write-intensive applications, such as database storage, are impacted by a performance overhead, particularly if pre-existing data exists in the read-only layer. On information and belief, a Docker image and a Docker container can be layered in a manner as shown in the image below.  Source: https://docs.docker.com/engine/storage/drivers/overlayfs-driver/.
[7.b.i] said leaf images including only additional data blocks not previously contained in said root image and changes made by	On information and belief, the American Count 1 Systems and Services practice storing leaf images, where said leaf images including only additional data blocks not previously contained in said root image and changes made by respective compute nodes to the blocks of the root image.

U.S. Patent No. 8,332,844 (Claim 7)	
Claim(s)	**Example American Count 1 Systems and Services**
respective compute nodes to the blocks of the root image,	For example, on information and belief, Docker includes a writable per runnable container layer for new data such as new files and including a copy on write strategy for changes made to the blocks of the root image. The layers are stacked on top of each other. When you create a new container, you add a new writable layer on top of the underlying layers. This layer is often called the "container layer". All changes made to the running container, such as writing new files, modifying existing files, and deleting files, are written to this thin writable container layer. The diagram below shows a container based on an `ubuntu:15.04` image. Source: https://docs.docker.com/engine/storage/drivers/.

U.S. Patent No. 8,332,844 (Claim 7)	
Claim(s)	**Example American Count 1 Systems and Services**
	 Source: https://docs.docker.com/engine/storage/drivers/.

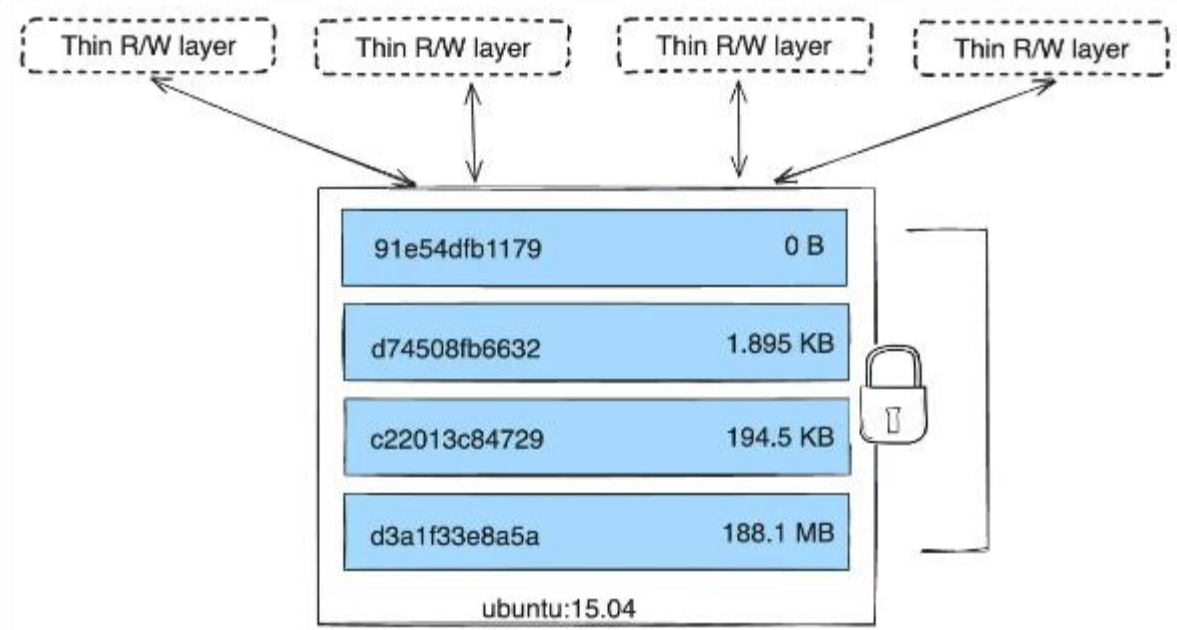
U.S. Patent No. 8,332,844 (Claim 7)	
Claim(s)	**Example American Count 1 Systems and Services**
	 Source: https://docs.docker.com/engine/storage/drivers/. Docker uses storage drivers to manage the contents of the image layers and the writable container layer. Each storage driver handles the implementation differently, but all drivers use stackable image layers and the copy-on-write (CoW) strategy. Source: https://docs.docker.com/engine/storage/drivers/.

U.S. Patent No. 8,332,844 (Claim 7)	
Claim(s)	**Example American Count 1 Systems and Services**
	 Source: https://docs.docker.com/engine/storage/drivers/. On information and belief, when a container is created or started, a thin writable container layer is added on top of the other layers, and any changes the container makes to the filesystem are stored in this layer, whereas any files that the container does not change do not get copied into this layer. Multiple containers can share access to the same image and maintain their own data state using their container layer.

U.S. Patent No. 8,332,844 (Claim 7)	
Claim(s)	**Example American Count 1 Systems and Services**
	Copying makes containers efficient When you start a container, a thin writable container layer is added on top of the other layers. Any changes the container makes to the filesystem are stored here. Any files the container doesn't change don't get copied to this writable layer. This means that the writable layer is as small as possible. Source: https://docs.docker.com/engine/storage/drivers/. Because each container has its own writable container layer, and all changes are stored in this container layer, multiple containers can share access to the same underlying image and yet have their own data state. The diagram below shows multiple containers sharing the same Ubuntu 15.04 image. Source: https://docs.docker.com/engine/storage/drivers/. *See also* claim limitations [7.a] and [7.b].

U.S. Patent No. 8,332,844 (Claim 7)	
Claim(s)	**Example American Count 1 Systems and Services**
[7.b.ii] wherein said leaf images of respective compute nodes do not include blocks of said root image that are unchanged by respective compute nodes; and	On information and belief, the American Count 1 Systems and Services practice said leaf images of respective compute nodes do not include blocks of said root image that are unchanged by respective compute nodes. For example, on information and belief, Docker contains a writable layer using copy on write, leaving unchanged image data in their original image layers. Docker uses storage drivers to manage the contents of the image layers and the writable container layer. Each storage driver handles the implementation differently, but all drivers use stackable image layers and the copy-on-write (CoW) strategy. Source: https://docs.docker.com/engine/storage/drivers/. The copy-on-write (CoW) strategy Copy-on-write is a strategy of sharing and copying files for maximum efficiency. If a file or directory exists in a lower layer within the image, and another layer (including the writable layer) needs read access to it, it just uses the existing file. The first time another layer needs to modify the file (when building the image or running the container), the file is copied into that layer and modified. This minimizes I/O and the size of each of the subsequent layers. These advantages are explained in more depth below. Source: https://docs.docker.com/engine/storage/drivers/.

U.S. Patent No. 8,332,844 (Claim 7)	
Claim(s)	**Example American Count 1 Systems and Services**
	On information and belief, when a container is created or started, a thin writable container layer is added on top of the other layers, and any changes the container makes to the filesystem are stored in this layer, whereas any files that the container does not change do not get copied into this layer. Multiple containers can share access to the same image and maintain their own data state using their container layer. Container and layers The major difference between a container and an image is the top writable layer. All writes to the container that add new or modify existing data are stored in this writable layer. When the container is deleted, the writable layer is also deleted. The underlying image remains unchanged. Because each container has its own writable container layer, and all changes are stored in this container layer, multiple containers can share access to the same underlying image and yet have their own data state. The diagram below shows multiple containers sharing the same Ubuntu 15.04 image. Source: https://docs.docker.com/engine/storage/drivers/.

U.S. Patent No. 8,332,844 (Claim 7)	
Claim(s)	**Example American Count 1 Systems and Services**
	 Source: https://docs.docker.com/engine/storage/drivers/. **Copying makes containers efficient** When you start a container, a thin writable container layer is added on top of the other layers. Any changes the container makes to the filesystem are stored here. Any files the container doesn't change don't get copied to this writable layer. This means that the writable layer is as small as possible. Source: https://docs.docker.com/engine/storage/drivers/.

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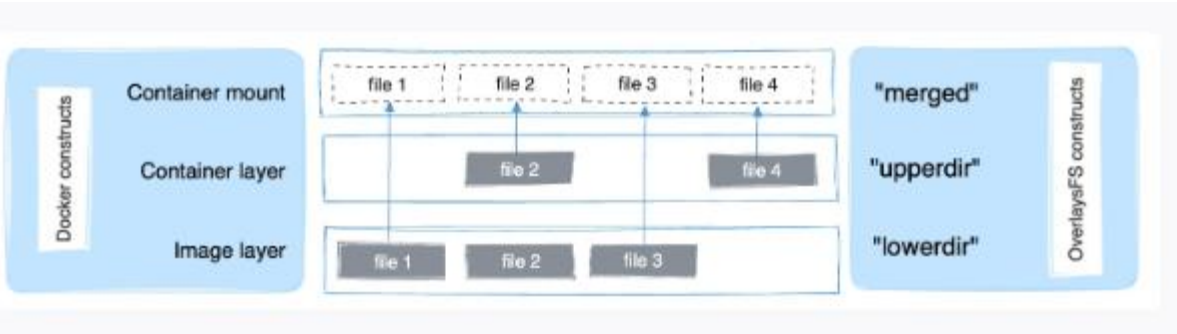
	Because each container has its own writable container layer, and all changes are stored in this container layer, multiple containers can share access to the same underlying image and yet have their own data state. The diagram below shows multiple containers sharing the same Ubuntu 15.04 image. Source: https://docs.docker.com/engine/storage/drivers/. On information and belief, in the example below, the image layer includes file 1, file 2, and file 3, and the container layer includes file 2 and file 4. The container mount provides a unified view of the image and container layers. In this example, the container layer does not include file 1 or file 3, and includes file 2 and file 4, which have either been modified or created.  Source: https://docs.docker.com/engine/storage/drivers/overlayfs-driver/. *See also* claim limitations [7.a], [7.b], and [7.b.i].
[7.c] caching blocks of said root image that have been accessed by at least one of said compute nodes in a cache memory.	On information and belief, the American Count 1 Systems and Services practice caching blocks of said root image that have been accessed by at least one of said compute nodes in a cache memory. Docker caches unchanged image layers from previous commands.

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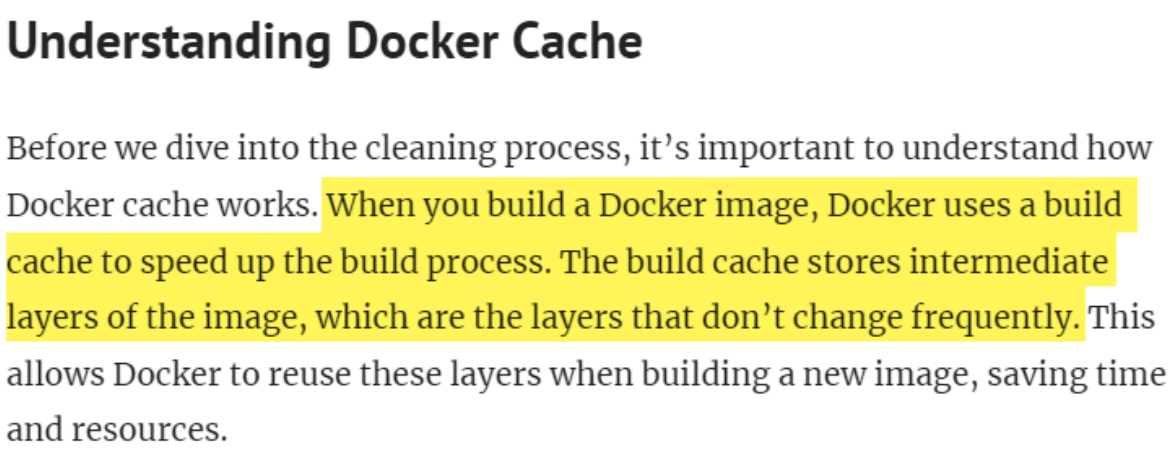
	 Source: https://docs.docker.com/build/cache/optimize/.  Source: https://collabnix.com/how-to-clear-docker-cache/.

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	At each occurrence of a RUN command in the Dockerfile, Docker will create and commit a new layer to the image, which is just a set of tightly-coupled directories full of various file structure that comprise a Docker image. In a default install, these are located in /var/lib/docker. During a new build, all of these file structures have to be created and written to disk — this is where Docker stores base images. Once created, the container (and subsequent new ones) will be stored in the folder in this same area. What makes the cache important? If the objects on the file system that Docker is about to produce are unchanged between builds, reusing a cache of a previous build on the host is a great time-saver. It makes building a new container really, really fast. None of those file structures have to be created and written to disk this time — the reference to them is sufficient to locate and reuse the previously built structures. Source: https://thenewstack.io/understanding-the-docker-cache-for-faster-builds/. *See* https://thenewstack.io/understanding-the-docker-cache-for-faster-builds/.